PLANAR MONOLITHICS INDUSTRIES, INC.

RF / MICROWAVE COMPONENTS & MULTIFUNCTION MODULES / SUBSYSTEMS

TECHNICAL CAPABILITIES & FACILITIES PRESENTATION

March 13, 2020

PMI WEST COAST:
4921 ROBERT J. MATHEWS PKWY, SUITE 1
EL DORADO HILLS, CA 95762, USA
Tel: 916-542-1401

PMI EAST COAST:
7311 - F GROVE ROAD
FREDERICK, MD 21704, USA
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sales@pmi-rf.com
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EAST AND WEST COAST OFFICES

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El Dorado Hills, CA 95762 • USA•
Phone: 916-542-1401
sales@pmi-rf.com
http://www.pmi-rf.com/about

EAST COAST FACILITY:
7311-F Grove Road
Frederick, MD 21704 • USA•
Phone: 301-662-5019

Amplifiers – Solid State
Attenuators – Variable/Programmable
Couplers (Quadrature, 180° & Directional)
Detectors – RF/Microwave
DLVAs, ERDLVAs & SDLVAs
DTos, VCOs, PLO, DROs, & Frequency Synthesizers
Filters & Switched Filter Banks
Form, Fit, Functional Products & Services
Frequency Discriminators & IFMs
Integrated MIC/MMIC Assemblies (IMAs)
IQ Vector Modulators
Limiters – RF/Microwave
Log Amplifiers
Millimeter Wave Components (Up to 50 GHz)
Miscellaneous Products
Multifunction Integrated Assemblies (MIAs)
Phase Shifters & Bi-Phase Modulators
Power Dividers/Combiners (Passive & Active)
Pulse Modulators (SPST)
Rack & Chassis Mount Products
Receiver Front Ends & Transceivers
SDLVAs, ERDLVAs & DLVAs
Single Side Band Modulators
SMT & QFN Products
Switch Matrices
Switched Filter Banks
Switches – Solid State
Systems - Radar Sense & Avoid
Systems – Fly Eye Radars
Threshold Detectors
USB Products
Planar Monolithics Industries, Inc. (PMI), an “S” Corporation, was founded by Dr. Ash (Ashok) Gorwara on November 11th, 1989 to take advantage of the growing demand in monolithic based products using Hybrid MIC/MMIC technology. PMI offers its unique DC to 50 GHz products for applications in space, military, telecommunications, communications and consumer electronics.

Today, PMI is being directed into the 21st Century by expanding the applications of RF/Microwave components and subsystems into new, low cost, RF/Microwave receiving and transmitting systems for both civilian and military customers.

Effective April 30 2013, PMI, 7311-F Grove Road, Frederick, Maryland, USA 21704, USA, http://www.pmi-rf.com acquired 100% of all the assets & property of HARI, LLC, www.harillc.com (Formerly operating as Genesis Microwave Inc., www.genesismicrowave.com) located at 4980 Hillsdale Circle, Suite B, El Dorado Hills, CA 95762, USA.

These assets include all the test and manufacturing equipment and machinery, designs, Documentation, drawings and Intellectual property in the form of hard copies and in computer format in servers, CD's, storage areas, etc. Also included in these assets are the Office Equipment & Machinery, etc. and Computers, Office furniture, Finished goods, In-process and Raw Materials & Inventories and other Miscellaneous items. In addition to these assets, included are, all the stock in trade, merchandise, fixtures, equipment, goodwill and trade of the known business as "HARI LLC".

All the RF/MICROWAVE products, components, subsystems, etc. being designed, manufactured, serviced and produced by HARI, LLC www.harillc.com (Formerly operating as Genesis Microwave Inc., www.genesismicrowave.com) until 30th April 30 2013, will now be offered, provided, produced, manufactured and serviced by PMI, at its West Coast Facilities Operations located at 4921 Robert J. Mathews Parkway, Suite 1, El Dorado Hills, CA 95762, USA.

HISTORY

Planar Monolithics Industries, Inc. (PMI), an “S” Corporation, was founded by Dr. Ash (Ashok) Gorwara on November 11th, 1989 to take advantage of the growing demand in monolithic based products using Hybrid MIC/MMIC technology. PMI offers its unique DC to 50 GHz products for applications in space, military, telecommunications, communications and consumer electronics.

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PMI was founded to take advantage of the growing demand in monolithic-based products using the Hybrid MIC/MMIC technology innovations that are mushrooming in a big way all over the world. High performance and reliable products can be obtained by using this technology.

A vacuum existed in the demand for state-of-the-art Hybrid MIC/MMIC Components and Subsystems. PMI has been setup to Design, Develop, Manufacture, Test, and Market complex state-of-the-art:

- Hybrid RF/Microwave and Monolithics Integrated Circuits (MIC/MMIC) and Components
- Hybrid MIC/MMIC Supercomponents and Subsystems

PMI provides its unique products for applications in space, military, communications, telecommunications and industrial electronics systems.

PMI has been set up to perform research, design, develop, manufacture and market various MIC/MMIC (Microwave Integrated Circuits and Monolithics Microwave Integrated Circuits) Components, Supercomponents, and Subsystems for applications in Telecommunications, Terrestrial, Satellite, and Mobile-Radio Communications, UAVs (Unmanned Aerial Vehicles) & Drones, Defense (ECM, ECCM, ESM, Radars, SIGINT, and Electronic Warfare), Navigation and Marine Electronics, FAA/DOT-Avionics, Ground Based Systems, and Microwave Landing Systems.

Worldwide demand exists for High Reliability, Low Cost systems. Such needs can be satisfied by PMI by using its unique Hybrid MIC/MMIC Technologies and products that the team has developed called Application Specific Hybrid Microwave/Monolithics Integrated Circuits (ASHMIC/ASHMMIC*). *Trademark of PMI.
As a manufacturer PMI utilizes our own designs for all components, integrated modules and subsystems:
Application of PMI DC to 50 GHz Components & Sub-Systems

Planar Monolithics Industries, Inc. has been in business for over 25 years as a manufacturer of electronic components for defense applications. Applications such as Receiver Front-Ends, Synthesizers and Transceivers. As well as a large variety of RF components that compliment this target market. Our technical goal is to produce the finest products available that resolve this mathematical statement:

\[ V_{\text{Input}} = A \cos(\omega_c t + \phi_t) \]

- **AMPLITUDE**
- **FREQUENCY**
- **PHASE & MODULATION**

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Application of PMI DC to 50 GHz Components & Sub-Systems

TYPICAL EW, ECM, ESM RECEIVER FRONT-END

\[ V_{\text{input}} = A \cos(\omega_c t + \phi_t) \]

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TUNER / SUPERHETRODYNNE FRONT-END

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Application of PMI DC to 50 GHz Components & Sub-Systems

TYPICAL TRANSCEIVER / TRANSPONDER BLOCK DIAGRAM
Application of PMI DC to 50 GHz Components & Sub-Systems

TYPICAL RADAR WARNING RECEIVER FRONT-END OR DIRECTION FINDING RECEIVER FRONT-END SUB-SYSTEM

Amplifiers – Solid State
Attenuators – Variable/Programmable
Couplers (Quadrature, 180° & Directional)
Detectors – RF/Microwave
DLVAs, ERDLVAs & SDLVAs
DTOs, VCOs, PLO, DROs, & Frequency Synthesizers
Filters & Switched Filter Banks
Form, Fit, Functional Products & Services
Frequency Discriminators & IFMs
Integrated MIC/MMIC Assemblies (IMAs)
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Miscellaneous Products
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Power Dividers/Combiners (Passive & Active)
Pulse Modulators (SPST)
Rack & Chassis Mount Products
Receiver Front Ends & Transceivers
SDLVAs, ERDLVAs & DLVAs
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Switched Filter Banks
Switches – Solid State
Systems – Radar Sense & Avoid
Systems – Fly Eye Radars
Threshold Detectors
USB Products

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TYPICAL RADAR WARNING RECEIVER FRONT-END OR DIRECTION FINDING RECEIVER FRONT-END SUB-SYSTEM
PMI specializes in replacing obsolete parts on old systems. We offer Form-Fit-Functional replacement Parts for any system. If a Source Control Drawing (SCD) is available we can offer a complete solution to meet all of the given electrical, mechanical and environmental specifications. PMI has designed, manufactured and delivered many of these replacement components such as:

- **IF & RF LOG AMPLIFIERS, SDLVAs & DLVAs**
- **LOW NOISE AMPLIFIERS, VARIABLE GAIN AMPLIFIERS & LIMITING AMPLIFIERS**
- **LIMITERS, DETECTORS, HYBRID COUPLERS & POWER DIVIDERS**
- **PHASE SHIFTERS & BI-PHASE MODULATORS**
- **I & Q VECTOR & SINGLE SIDE-BAND MODULATORS**
- **FILTERS AND SWITCH FILTER BANKS**
- **SWITCHES AND ATTENUATORS**

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PMI PRODUCTS

0.5 to 18.0 GHz
Absorptive Transfer Switch

0.1 to 18.0 GHz
SP9T Reflective Switch

2.0 to 18.0 GHz
SP2T Absorptive Switch

2.0 to 18.0 GHz
SP3T Absorptive Switch

0.1 to 52.0 GHz
SP16T Absorptive Switch

8.0 to 40.0 GHz
SPST Absorptive Switch

9.5 to 10.0 GHz
SP3T Reflective Switch

0.8 to 18.0 GHz
SP7T Absorptive Switch

2.0 to 20.0 GHz
SP6T Absorptive Switch

0.1 to 20.0 GHz
SP4T Absorptive Switch

0.1 to 18.0 GHz
SP3T Reflective Switch

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Switched Filter Banks
Switches – Solid State
Systems - Radar Sense & Avoid
Systems – Fly Eye Radars
Threshold Detectors
USB Products
PMI PRODUCTS

1.0 to 1.1 GHz
1.0 to 1.1 GHz

1.6 W Peak, SP2T Reflective Switch
0.7 W CW, SP6T Absorptive Switch
0.3 to 10.0 GHz, 10 W CW, SP2T Reflective Switch
0.3 to 10.0 GHz, 10 W CW, SP2T Reflective Switch

2.5 kW Peak, Integrated T/R Switch Module
2.0 to 4.0 GHz, 300 W Peak, SP2T Reflective Switch
4.0 to 8.0 GHz, 300 W Peak, SP2T Reflective Switch
8.0 to 18.0 GHz, 300 W Peak, SP2T Reflective Switch

6.0 to 18.0 GHz
7.0 to 18.0 GHz
1.0 to 18.0 GHz

1 W CW, SP3T Absorptive Switch
1 W CW, SP3T Absorptive Switch
1.0 to 1.1 GHz
1.0 to 1.1 GHz

100 W Average, SP2T Reflective Switch
100 W Average, SP2T Reflective Switch

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1.0 to 4.0 GHz, Voltage Variable Attenuator

1.0 to 18.0 GHz, 60 dB Digital Attenuator

DC to 2.0 GHz, Switched Bit Attenuator

0.5 to 18.0 GHz, 20 dB Switched Bit Attenuator

Digitally Tuned Attenuators

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12.0 to 18.0 GHz
Frequency Discriminator

0.1 to 18.0 GHz, CW Immune SDLVA

8.0 to 18.0 GHz, SDLVA

1.1 to 1.12 GHz, 180° Bi-Phase
Modulator/Phase Shifter

6.0 to 18.0 GHz, 360° Digital Phase Shifter

8.0 to 10.0 GHz, 360° Digital
Phase Shifter

SP3T Switch
1.0 to 2.0 GHz, LNA w/35 dB Gain & 1.4 dB Noise Figure

2.0 to 18.0 GHz, Limiting Amplifier with +21 dBm Limited Output

10 MHz to 6.0 GHz Portable Amplifier with 30 dB Gain

1.6 to 2.7 GHz, Limiting Amplifier w/40 dB Gain & Limited RF Output of +15 dBm

2.0 to 18.0 GHz, LNA w/30 dB Gain & 4 dB Noise Figure

9.0 to 10.0 GHz, LNA w/37 dB Gain & 3 dB Noise Figure

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PMI PRODUCTS

4-Way Power Divider with Quad Phase
Output of J2=0°, J3=90°, J4=180° & J5=270°

Quadrature Couplers

30 MHz to 6.0 GHz, Amplified
8-Way Power Divider

20 MHz to 6.0 GHz, Amplified
4-Way Power Divider

6.0 to 19.0 GHz, 2-Way Power Divider

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1.0 GHz, Frequency Discriminator

2.0 to 18.0 GHz, SDLVA

1.0 to 18.0 GHz Limiting Amplifier

2.0 to 18.0 GHz Digital Frequency Discriminator

8.8 to 9.46 GHz
Temperature Stabilized Output Medium
Power X-Band Gunn-Effect Oscillator

3.1 to 3.5 GHz
Bi-Directional Variable Attenuator

26.5 to 40.0 GHz, Passive Amplitude Equalizer

0.5 to 8.0 GHz
RF Limiter

0.75 to 1.25 GHz SDLVA

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1.0 to 20.0 GHz
6-Channel Switch Filter Bank

2.0 to 6.0 GHz
Integrated Microwave Assembly

2.0 to 18.0 GHz
Bi-Phase Modulator

18.0 to 40.0 GHz
Bi-Phase Modulator

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0.4 to 2.0 GHz, Coaxial Limiter

0.03 to 3.0 GHz, High Power Limiter

18.0 to 40.0 GHz, High Power Limiter

0.5 to 8.0 GHz, Active Limiter

0.01 to 2.5 GHz, 100 W CW, 1 kW Peak, RF Limiter

18.0 to 40.0 GHz, Low Loss Diplexer

750 MHz Cavity Filter with 500 MHz, 1 dB Bandwidth

Low Pass Filter with 2400 MHz Cutoff Frequency

6.0 to 18.0 GHz, Filter/Detector

Bandpass Filter, centered at 160 MHz with a 3 dB Bandwidth of 20 MHz ±5%

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1.0 to 18.0 GHz
4 W CW RF Limiter

0.1 to 20.0 GHz
10 W Pulsed RF Limiter

10 MHz to 14.0 GHz, 100 W CW RF Limiter

10 MHz to 18.0 GHz, 20 W CW RF Limiter

20 MHz to 15.0 GHz, 100 W CW RF Limiter

20 MHz to 18.0 GHz, 80 W CW RF Limiter

20 MHz to 18.0 GHz, 100 W CW RF Limiter

10 MHz to 9.0 GHz, 100 W CW RF Limiter

10 MHz to 18.0 GHz, 3 W CW Limiter

2.0 to 18.0 GHz, +50 dBm Peak RF Limiter

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5.4 to 5.9 GHz, Digitally Controlled Phase Shifter

0.5 to 18.0 GHz, Threshold Detector

8.0 to 18.0 GHz, Lange Coupler

6.0 to 18.0 GHz, Synthesizer, Switch Filter Bank, Amplifier Module

16.0 GHz Fo, 2.0 GHz Bandwidth, Cavity Filter

2.0 to 20.0 GHz, SP6T Switch

Miniature, 2 Channel Switch Filter Bank

DC to 2.0 GHz, Electro-mechanical STEP Attenuator

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2.0 to 18.0 GHz, Threshold Detector

18.0 to 40.0 GHz, Low Noise, Tunnel Diode Detector

0.5 to 18.0 GHz, High Speed, High Sensitivity Diode Detector

4.0 to 26.5 GHz, Zero Bias Schottky Detector

2.0 to 18.0 GHz, High Speed, LVPECL Logic Output Threshold Detector

0.5 to 18.0 GHz, High Speed, High Sensitivity Diode Detector

2.5 to 3.5 GHz, High Speed, DC-Coupled, Directional Detector

3.8 to 4.6 GHz, High Speed Threshold Detector

4.0 to 4.5 GHz, Ultra-High Speed, High Sensitivity Threshold Detector

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http://www.pmi-rf.com/about

EAST COAST FACILITY:
7311-F Grove Road
Frederick, MD 21704 • USA•
Phone: 301-662-5019
PMI PRODUCTS

- 10.0 GHz, Integrated Phase Shifter Dielectric Resonator Oscillator (DRO) Module
- 21.0 GHz, Beam Forming Monopulse Circuit
- 2.0 to 18.0 GHz, Digitally Tuned Oscillator (DTO)
- 6.0 to 18.0 GHz, Synthesizer
- 1.0 to 18.0 GHz, Frequency Discriminator
- Delay Line in a Frequency Discriminator
- 10.0 GHz, Integrated Phase Shifter and Dielectric Resonator Oscillator (DRO) Module (Inside)

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El Dorado Hills, CA 95762 • USA•
Phone: 916-542-1401

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EAST COAST FACILITY:
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Amplifiers – Solid State
Attenuators – Variable/Programmable
Couplers (Quadrature, 180° & Directional)
Detectors – RF/Microwave
DLVAs, ERDLVAs & SDLVAs
DTos, VCOs, PLO, DROs, & Frequency Synthesizers
Filters & Switched Filter Banks
Form, Fit, Functional Products & Services
Frequency Discriminators & IFMs
Integrated MIC/MMIC Assemblies (IMAs)
IQ Vector Modulators
Limiters – RF/Microwave
Log Amplifiers
Millimeter Wave Components (Up to 50 GHz)
Miscellaneous Products
Multifunction Integrated Assemblies (MIAs)
Phase Shifters & Bi-Phase Modulators
Power Dividers/Combiners (Passive & Active)
Pulse Modulators (SPST)
Rack & Chassis Mount Products
Receiver Front Ends & Transceivers
SDLVAs, ERDLVAs & DLVAs
Single Side Band Modulators
SMT & QFN Products
Switch Matrices
Switched Filter Banks
Switches – Solid State
Systems - Radar Sense & Avoid
Systems – Fly Eye Radars
Threshold Detectors
USB Products

7.0 to 18.0 GHz, 75 dB SDLVA
6.0 to 18.0 GHz, SDLVA
0.5 to 18.0 GHz, 50 dB DLVA
2.0 to 18.0 GHz, 65 dB CW Immune ERDLVA
7.0 to 18.0 GHz, 75 dB DLVA
8.0 to 18.0 GHz, 40 dB SDLVA
700 to 1250 MHz, 70 dB SDLVA
18.0 to 40.0 GHz, 65 dB SDLVA
2.0 to 18.0 GHz, 65 dB ERDLVA
3.0 to 18.0 GHz, 70 dB SDLVA
2.0 to 4.0 GHz, 45 dB DLVA
100 to 700 MHz, 55 dB SDLVA
PMI PRODUCTS

2.0 to 8.0 GHz
CW Immune EW Detector Module

2.0 to 8.0 GHz
CW Immune EW Detector Module

2.0 to 8.0 GHz
CW Immune EW Detector Module

8.0 to 10.0 GHz
Detector Log Video Amplifier

8.0 to 18.0 GHz
CW Immune EW Detector Module

1.0 to 20.0 GHz
Miniature Successive Detection Log Video Amplifier

1.0 to 20.0 GHz
Miniature Successive Detection Log Video Amplifier

8.0 to 10.0 GHz
Detector Log Video Amplifier

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USB Products
PMI PRODUCTS

6.0 to 18.0 GHz, I/Q Vector Modulator

85 MHz to 18.0 GHz, I/Q Vector Modulator

IF Logarithmic Amplifier (SDLVA)

0.1 to 18.0 GHz, Threshold Detector

0.95 to 18.0 GHz, 8 Channel Switch Filter Bank

PMI PRODUCTS

6.0 to 18.0 GHz, Limiting Amplifier

24.0 to 40.0 GHz, Bandpass Filter

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2.0 to 18.0 GHz, I/Q Vector Modulator

1.0 to 18.0 GHz, Triplexer

1030 MHz ±0.01 MHz, Power Detector Module

0.5 to 18.0 GHz, Custom Phase (±10°) & Amplitude (±1.5 dB) Matched Integrated Modules/Assemblies

9410 MHz, Multi-Function Module

10 MHz to 18.0 GHz, Amplified Detector Module

14.65 to 15.35 GHz Integrated Limiter and Attenuator

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PMI PRODUCTS

1.0 to 18.0 GHz Channelized Receiver

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Threshold Detectors
USB Products
PMI PRODUCTS

11.825 GHz Band Pass Filter

1.0 to 18.0 GHz Band Pass Filter

DC to 26.0 GHz 5-Channel Switch Filter Bank

0.5 to 18.0 GHz 16-Way Power Divider

14.125 GHz Band Pass Filter

70 to 330 MHz Threshold Detector

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14.125 GHz Band Pass Filter
PMI PRODUCTS

1.0 to 18.0 GHz
4-Way Power Divider

20 MHz to 20.0 GHz Limiter

0.1 to 20.0 GHz Limiter

6.0 to 18.0 GHz, 120 W CW (1.5 kW Peak), SP2T Reflective Switch

1.0 to 22.0 GHz
4-Way Power Divider

8.0 to 12.0 GHz, 120 W CW (1.5 kW Peak), SP2T Reflective Switch

2.0 to 18.0 GHz
4-Way Power Divider

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Systems – Fly Eye Radars
Threshold Detectors
USB Products

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PMI PRODUCTS

DC to 3.5 GHz Microstrip Low Pass Filter

6.0 to 18.0 GHz, 50 W CW (1.5 kW Peak), SP2T Reflective Switch

DC to 6.0 GHz Microstrip Low Pass Filter

1.0 to 18.0 GHz Portable Amplifier

DC to 2.0 GHz Microstrip Low Pass Filter

6.0 to 18.0 GHz, 120 W CW (1.5 kW Peak), SP2T Reflective Switch

DC to 12.0 GHz Microstrip Low Pass Filter

DC to 1.25 GHz Microstrip Low Pass Filter

6.0 to 18.0 GHz, 120 W CW (1.5 kW Peak), SP2T Reflective Switch

DC to 10.0 GHz Microstrip Low Pass Filter

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PMI PRODUCTS

6.0 to 18.0 GHz
CW Immune EW Detector Module

11.0 GHz Band Pass Filter

2.5 to 18.0 GHz
High Pass Filter

6.0 to 18.0 GHz
Low Noise Amplifier

6.0 to 18.0 GHz
Portable Adjustable Threshold Detector

8.0 to 12.0 GHz Amplifier

2.0 to 18.0 GHz
4-Way Power Divider

7519.95 MHz PDRO

6.0 to 18.0 GHz
CW Immune EW Detector Module

2.5 to 18.0 GHz
High Pass Filter

8.0 to 12.0 GHz Amplifier

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8.0 to 12.0 GHz Amplifier

0.2 to 18.0 GHz
8-Bit Digitally Tuned Attenuator

0.2 to 18.0 GHz
8-Bit Digitally Tuned Attenuator
PMM PRODUCTS

13.0 to 14.0 GHz
8-Bit Programmable Attenuator

0.5 to 18.0 GHz
Dual Gain Amplifier

4.0 to 8.0 GHz
SP20T Absorptive Switch

328 to 335.5 MHz
7-Way Power Divider

30 MHz to 3.0 GHz
High Power Limiter

4828.57 MHz
Band Pass Filter

2.0 to 18.0 GHz
SP6T Reflective Switch

2.0 to 12.0 GHz
Low Noise Amplifier

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0.1 to 18.0 GHz Transceiver

0.1 to 18.0 GHz CW-Immune SDLVA

2.6 to 5.2 GHz High Speed Integrated Module

840 MHz Phase-Locked Oscillator

10 MHz, 8-Way Amplified Power Divider

0.1 to 18.0 GHz Integrated Module

0.1 to 18.0 GHz Transceiver Module

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PMI PRODUCTS

2.0 to 4.0 GHz Frequency Discriminator

10 MHz to 6.0 GHz SP2T Reflective, 20 W Switch

12.0 to 18.0 GHz Frequency Discriminator

0.5 to 8.0 GHz SP2T Reflective, 50 W Switch

10 MHz to 8.0 GHz SP2T Reflective, 50 W Switch

70 MHz Frequency Discriminator

0.5 to 10.0 GHz SP2T Reflective, 10 W Switch

3.1 to 3.5 GHz Frequency Discriminator

6.0 to 18.0 GHz Frequency Discriminator

1.0 to 18.0 GHz SP2T Reflective, 10 W Switch

8.0 to 12.0 GHz Frequency Discriminator

8.0 to 12.0 GHz SP2T 10 W Switch

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PMI PRODUCTS

32.0 to 37.0 GHz
8-Bit Digitally Controlled Phase Shifter

2.0 to 18.0 GHz
2-Way Power Divider

85 MHz to 4.0 GHz
Digitally Controlled Analog Phase Shifter

2.0 to 18.0 GHz
12-Bit Vector Phase Shifter

18.0 to 40.0 GHz
2-Way Power Divider

0.2 to 10.0 GHz
8-Bit Digital Phase Shifter

2.0 to 18.0 GHz
2-Way Power Divider

0.1 to 18.0 GHz
2-Way Power Divider

5.0 to 18.0 GHz
Analog Phase Shifter

2.0 to 26.0 GHz
4-Way Power Divider

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PMI PRODUCTS

DC to 40.0 GHz
SPST Absorptive Switch

0.1 to 50.0 GHz
SP2T Absorptive Switch

0.5 to 40.0 GHz
SP3T Absorptive Switch

0.5 to 40.0 GHz
SP4T Absorptive Switch

0.1 to 50.0 GHz
SP5T Absorptive Switch

0.5 to 40.0 GHz
SP8T Absorptive Switch

7.0 to 18.0 GHz
SP20T Absorptive Switch

0.5 to 18.0 GHz
SP12T Absorptive Switch

0.5 to 18.0 GHz
SP32T Absorptive Switch

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PLANAR MONOLITHICS INDUSTRIES, INC.
FACILITIES INFORMATION

7311-F GROVE ROAD, FREDERICK, MD:
- 5,000 sq. ft. Facility
- Components Manufacturing
- Sub-Assembly Manufacturing
- Hybrid Assembly
- 1,000 sq. ft. Class 100,000 ppm Clean Room
- Engineering Department
- Test Department
- Production Officer
- QA/QC Office
- Engineering Department
- Test Department
- Production Officer
- QA/QC Office
- Conference Room

7310 GROVE ROAD, FREDERICK, MD:
- 1,000 sq. ft. Facility
- Accounting & Human Resources Offices
- Executive Vice President's Office

5714-C INDUSTRY LANE, FREDERICK, MD:
- 2,222 sq. ft. Facility
- Machine Shop

6590 WATERS EDGE CT, NEW MARKET, MD:
- 4,000 sq. ft. Facility
- CORPORATE HQ
- Conference Rooms & Executive Offices

4921 Robert J. Mathews Pkwy, El Dorado Hills, CA:
- 5,100 sq. ft. Facility
- Components Manufacturing
- Hybrid Assembly
- Test and Engineering Departments
- Production and Quality Departments
- Continued Manufacturing Previous HARI, LLC
- (formally Genesis Microwave)
- Products as listed at www.harillc.com
- and www.genesismicrowave.com

ACCOUNTING & CORPORATE INFO:
- Type “S” Corporation, Pennsylvania
- Peachtree Sage 50, 2013
- EXACT MAX MRP
- Accrual Basis Accounting Practice
- Fiscal Year is December 31st
- GAAP Guidelines Followed
- Monthly Internal Financial Reports
- Weekly Cash Flow Analysis Reports

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Phone: 916-542-1401

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http://www.pmi-rf.com/about

EAST COAST FACILITY:
7311-F Grove Road
Frederick, MD 21704 • USA•
Phone: 301-662-5019
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2015 TOTAL: 100.00%

2016 TOTAL: 100.00%

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Frederick, MD 21704 • USA •
Phone: 301-662-5019
## Orders Booked Statistics by Country
### 2017 through 2019

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<td>2019 TOTAL:</td>
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Amplifiers – Solid State
Attenuators – Variable/Programmable
Couplers (Quadrature, 180° & Directional)
Detectors – RF/Microwave
DLVAs, ERDLVAs & SDLVAs
DTOs, VCOs, PLO, DROs, & Frequency Synthesizers
Filters & Switched Filter Banks
Form, Fit, Functional Products & Services
Frequency Discriminators & IFMs
Integrated MIC/MMIC Assemblies (IMAs)
IQ Vector Modulators
Limiters – RF/Microwave
Log Amplifiers
Millimeter Wave Components
(Up to 50 GHz)
Miscellaneous Products
Multifunction Integrated Assemblies (MIAs)
Phase Shifters & Bi-Phase Modulators
Power Dividers/Combiners (Passive & Active)
Pulse Modulators (SPST)
Rack & Chassis Mount Products
Receiver Front Ends & Transceivers
SDLVAs, ERDLVAs & DLVAs
Single Side Band Modulators
SMT & QFN Products
Switch Matrices
Switched Filter Banks
Switches – Solid State
Systems - Radar Sense & Avoid
Systems – Fly Eye Radars
Threshold Detectors
USB Products
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- Amplifiers – Solid State
- Attenuators – Variable/Programmable
- Couplers (Quadrature, 180° & Directional)
- Detectors – RF/Microwave
- DLVAs, ERDLVAs & SDLVAs
- DTOs, VCOs, PLO, DROs, & Frequency Synthesizers
- Filters & Switched Filter Banks
- Form, Fit, Functional Products & Services
- Frequency Discriminators & IFMs
- Integrated MIC/MMIC Assemblies (IMAs)
- IQ Vector Modulators
- Limiters – RF/Microwave
- Log Amplifiers
- Millimeter Wave Components (Up to 50 GHz)
- Miscellaneous Products
- Multifunction Integrated Assemblies (MIAs)
- Phase Shifters & Bi-Phase Modulators
- Power Dividers/Combiners (Passive & Active)
- Pulse Modulators (SPST)
- Rack & Chassis Mount Products
- Receiver Front Ends & Transceivers
- SDLVAs, ERDLVAs & DLVAs
- Single Side Band Modulators
- SMT & QFN Products
- Switch Matrices
- Switched Filter Banks
- Switches – Solid State
- Systems - Radar Sense & Avoid
- Systems – Fly Eye Radars
- Threshold Detectors
- USB Products
PMI EAST COAST OPERATIONS

Keysight 50 GHz PNA

2.0 to 18.0 GHz
200 W CW TWT Amplifiers

SSPA 10 MHz to 2.0 GHz, 100 W CW

20 W Fiber Laser

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Detectors – RF/Microwave
DLVs, ERDLVs & SDLVs
DTos, VCoS, PLO, DROs, & Frequency Synthesizers
Filters & Switched
Filter Banks
Form, Fit, Functional
Products & Services
Frequency Discriminators & IFMs
Integrated MIC/MMIC
Assemblies (IMAs)
IQ Vector Modulators
Limiters – RF/Microwave
Log Amplifiers
Millimeter Wave
Components (Up to 50 GHz)
Miscellaneous Products
Multifunction Integrated
Assemblies (MIAs)
Phase Shifters & Bi-Phase
Modulators
Power Dividers/Combiners
(Passive & Active)
Pulse Modulators (SPST)
Rack & Chassis Mount
Products
Receiver Front Ends & Transceivers
SDLVs, ERDLVs & DLVs
Single Side Band
Modulators
SMT & QFN Products
Switch Matrices
Switched Filter Banks
Switches – Solid State
Systems - Radar Sense & Avoid
Systems – Fly Eye Radars
Threshold Detectors
USB Products
PMI EAST COAST OPERATIONS

WEST COAST FACILITY:
4921 Robert J. Mathews Pkwy, Suite 1
El Dorado Hills, CA 95762 • USA•
Phone: 916-542-1401

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http://www.pmi-rf.com/about

EAST COAST FACILITY:
7311-F Grove Road
Frederick, MD 21704 • USA•
Phone: 301-662-5019

Amplifiers – Solid State
Attenuators – Variable/Programmable
Couplers (Quadrature, 180° & Directional)
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Random Vibration

Thermal Shock

Shock Testing

Hermetic Package Testing
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Cycling Chamber
CO₂ Laser
UV Curing Light Printer
Hermetic Laser Welder
Hot/Cold Plate
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Metallurgic Microscope
Plasma Cleaners
Thermal Shock
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HAAS DT1 CNC Milling Machine

Amplifiers – Solid State
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Mazak Nexus 430A-II CNC Milling Machine

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EAST COAST FACILITY:
7311-F Grove Road
Frederick, MD 21704 • USA•
Phone: 301-662-5019
Network Analyzers:
- (3) Agilent N5230A PNA (10 MHz to 40 GHz)
- (2) Agilent N5230A PNA (10 MHz to 20 GHz)
- (2) Agilent N5230C-420 PNA-L (10 MHz to 40 GHz)
- (2) Agilent N4691 E-CAL (10 MHz to 20 GHz)
- (2) Agilent N4692 E-CAL (10 MHz to 40 GHz)
- (1) Agilent E8363C PNA (10 MHz to 40 GHz)
- (1) HP Network Analyzer (10 kHz to 300 MHz)
- (1) HP 5100 Network Analyzer (0.5 to 26.5 GHz)
- (1) Agilent N5230C PNA Network Analyzer (10 MHz to 20 GHz)
- (1) Keysight E8364B PNA Network Analyzer (10 MHz to 40 GHz)
- (1) Keysight N5234A PNA-L Network Analyzer (10 MHz to 50 GHz)
- (1) Keysight N4692A E-CAL (10 MHz to 50 GHz)
- (1) Keysight 8362B Network Analyzer (10 MHz to 20 GHz)

Noise Figure Meter:
- (2) Agilent N8975A (10 MHz to 26.5 GHz)
- (1) Keysight E8364B PNA Network Analyzer (10 MHz to 40 GHz)
- (1) Keysight N5234A PNA-L Network Analyzer (10 MHz to 50 GHz)
- (1) Keysight N4692A E-CAL (10 MHz to 50 GHz)

Power Meter:
- (3) Gigatronics 8541B/C, 8542C
- (4) Agilent E4418B
- (1) Agilent N1913A

Pulse/Signal Generators:
- (1) Agilent E8257D
- (1) Anritsu MG3692B
- (1) HP 8015A
- (1) HP 8013B
- (1) HP 8012B
- (1) HP 8350B Sweep Oscillator
- (1) HP Arbitrary Waveform Generator 33120A
- (1) HP 8664A
- (1) Wavetek Model 801
- (2) HP 8673D
- (2) Agilent 33522A Arbitrary Waveform Generator
- (2) Keysight E8257A PSG Analog Signal Generator
- (5) Keysight E8257D PSG Analog Signal Generator

Oscilloscopes:
- (1) Tektronix TDS210
- (1) Tektronix TDS2024C
- (1) Agilent DS06034A
- (1) Keysight DSO80204B
- (1) Keysight DSOS204A
- (4) Agilent DS0X3034A

Spectrum Analyzer:
- (1) HP 8593E
- (1) HP E4448A PSA Spectrum Analyzer (3 Hz to 50 GHz)
- (1) Keysight N9030A Spectrum Analyzer (3 Hz to 50 GHz)
- (1) Keysight 8563E Spectrum Analyzer (9 kHz - 26.5 GHz)

Power Amplifiers:
- (1) Varian TWTA 7 – 18 GHz, 20W
- (1) CPI TWT Amplifier (2-8 & 8-18 GHz) 300 W CW
- (1) MC (3-3.5 GHz) 100 W
- (1) MC (800 – 1000 MHz) 100 W
- (1) MC (20 - 512 MHz) 25-50 W
- (1) MC (20-500 MHz) 100 W
PMI East Coast Operations
Manufacturing and Standards

Manufacturing Equipment:

- (1) TSE-11-A ESPEC Thermal Shock Chamber
- (1) T Shock Jr. Thermal Shock Chamber
- (1) JEN410 IR Reflow Oven
- (1) Thermo Electron Oven
- (2) Anatech Plasma Cleaner
- (1) Metallurgical Microscope MT1000
- (5) Westbond 74767E-79 Convertible Wire Bonder
- (1) Westbond 7476E-79 Wedge Wire Bonder
- (2) Westbond 7400A Wedge Wire Bonder
- (1) Dage Bond Puller / Die Shear
- (1) Unitek Unibond-II Parallel Gap Welder
- (2) HAAS DT1 CNC Milling Machine
- (1) Mazak Nexus 430A-II CNC Milling Machine
- (1) Hardinge Turret Lathe
- (1) Di-Acro Power Shear
- (1) Brady Label Machine BP-THT-600-11
- (7) ESS Thermal Hot/Cold Plates
- (1) Ling Dynamic V650 Random Vibration Setup
- (1) Shock Tester
- (1) Varian Helium Leak Tester
- (1) 2.0 to 18.0 GHz 200 W CW TWT Amplifiers
- (1) Keysight 50 GHz PNA
- (1) SSPA 10 MHz to 2.0 GHz, 100 W CW
- (1) 20 W Fiber Laser
- (1) Hermetic Package Tester
- (1) UV Curing Light Printer
- (1) Hermetic Laser Welder
- (1) Cycling Chamber
- (1) CO₂ Laser

Software:

- Keysight - Genesys S/Filter Synthesis and Simulation
- Ansys – HFSS, High Frequency Structural Simulator
- Exact MAX – MRP/ERP Software
- AutoCAD 2005
- AutoCAD 2013
- Altium Designer
- Microwave Office
- SolidWorks 2014
- Gibbs Cam

Standards:

- ISO9001
- MIL-STD-454
- MIL-STD-202
- MIL-STD-883
- MIL-E-5400
- MIL-I-45208
- IPC-A-610 Workmanship Standard
- IPC-J-STD-001 Soldering Standard
- MIL-STD-45662 Calibration Standard
PMI West Coast Operations

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Systems – Fly Eye Radars  
Threshold Detectors  
USB Products
PMI West Coast Operations

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HAAS DT1 CNC Milling Machine

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USB Products
Network & Spectrum Analyzers:
- (5) HP 8757D Scalar Analyzers
- (1) HP 8720D Network Analyzer
- (1) HP 8565E Spectrum Analyzer (50 GHz)
- (1) HP 8592L Spectrum Analyzer
- (1) Keysight E8364B PNA Network Analyzer (10 MHz to 50 GHz)

Noise Figure Meters:
- (1) HP 8970A Noise Meter
- (1) Keysight N4002A Noise Source

Power Meters:
- (1) HP EPM-442 Power Meter
- (1) E4412A Power Meter
- (1) HP 437B Power Meter
- (1) HP 437A Power Meter

Pulse/Signal Generators:
- (1) HP 83731B Signal Generator
- (1) HP 83620A Signal Generator
- (1) HP 8013B Pulse Generator
- (4) HP 83620A Sweep Generators

Oscilloscopes:
- (1) Infinium Digital Scope & Probe
- (1) Keysight MSO-X-3054A 500 MHz BW
- (1) Tektronix 2246 100 MHz BW
- (1) Tektronix 2465A 350 MHz BW

Manufacturing Equipment:
- (1) Quincy Model 40 Oven
- (1) Sym-Tek P162PSJ Oven
- (1) Cole/Parm 05015-50 Oven
- (1) Blue M Stable Therm Oven
- (1) Branson 821D Ultrasonic Cleaner
- (2) UNITEK Gap Welders
- (1) Anatech Plasma Cleaner/Etcher
- (3) Westbond 7400A Wedge Bonders
- (1) Westbond 8850 Bond Pull Center
- (3) Westbond 1200A Die Attach Stations
- (1) HAAS DT1 CNC Milling Machine
- (2) Westbond 8849 Convertible Wire Bonder
- (1) Westbond 8850 Ball Bonder
- (1) Westbond 7600B Ribbon Bonder
- (4) Thermal Hot/Cold Plates
- (4) Hot Plates

Software:
- Keysight - Genesys S/Filter Synthesis and Simulation
- Ansys – HFSS, High Frequency Structural Simulator
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- MIL-STD-883
- MIL-E-5400
- MIL-I-45208
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Trained and Experienced ITAR/Export Administrator

Export Compliance Manual

AES (Automated Export System) certified export staff

Long Term Relationships with both DDTC and SNAP-R Personnel

U.S. Government Registration Numbers:
- Cage Code: 05XQ0 (East Coast)
- Cage Code: 71A34 (West Coast)
- DUNS Number: 829998517
- SAM (CCR) Registration: 1998E211401
- Federal Tax ID (TIN): 52-1756966
- DDTC Registrant Code: M16913
- DSS Cleared Facility
International Traffic in Arms Regulations

United States Department of State
Bureau of Political-Military Affairs
Directorate of Defense Trade Controls
Washington, D.C. 20522-0112

August 8, 2019

Sebastian Palacio, Vice President
Planar Monolithics Industries, Inc.
7311-F Grove Road
Frederick, MD 21704
SPALACIO@PMI-RF.COM

REGISTRANT CODE: M16913
EXPIRATION DATE: 08/31/2020

Reference: Manufacturer and Exporter Registration Statement and Fee Submission

Dear Mr. Palacio:

The Office of Defense Trade Controls Compliance received your registration statement and fee to register as a manufacturer and exporter. We have reviewed your registration statement and your registration code is M16913, which expires on 08/31/2020.

Any person who engages in the United States in the business of either manufacturing or exporting defense articles or furnishing defense services is required to register and keep that registration current with this office pursuant to the Arms Export Control Act (AECA) and the International Traffic in Arms Regulations (ITAR Part 129). Registration serves as a precondition to submitting an application for an export license or other approval from the Directorate of Defense Trade Controls (DDTC), or to use export exemptions. This registration does not satisfy the requirements for registering as a broker pursuant to ITAR Part 129.

As you are the senior officer empowered to sign the registration statement, we ask you to maintain records consistent with ITAR Section 122.5 regarding: 1) The key senior officer listed on the registration who will oversee the compliance program and be responsible for designating the direct employees who will serve as “empowered officials” at their place of employment, and 2) A list of qualified, direct employees who will serve as “empowered officials” by name, position, business unit, phone and fax numbers and email addresses. Please note that third parties (individuals who are not direct employees, such as consultants, subcontractors or outside counsel, for example) cannot serve as “empowered officials.”

ITAR Section 122.5 requires you to maintain records concerning your registration and the manufacture, acquisition and disposition of defense articles; the provision of defense services; and information on political contributions, fees, or commissions furnished or obtained, as required by ITAR Part 130. Records maintained shall be available at all times for inspection and copying by this office or by Customs officials. To maintain such records, managers, supervisors and employees need appropriate training on AECA and ITAR requirements and must understand the individual and organizational ramifications of failure to comply. Ramifications may include shipment delay and/or shipment seizure by Customs and Border Protection, loss of export privileges, or criminal charges.

You may refer to the DDTC website for a Compliance Guide at http://www.pmddtc.state.gov/ and then click on the Compliance tab. The DDTC website also includes a copy of the ITAR, explanations of export licensing procedures, how to submit a license application, country sanctions, individuals/companies banned by the Department of State, and other export matters. The website also includes procedures for requesting a commodity jurisdiction determination (ITAR Section 120.4) should you have questions on whether an article, services, or technical data is covered by the ITAR Part 121 (U.S. Munitions List).

Please include your registration code and the following statement on all registration correspondence to this office: “Under penalty according to federal law (22 CFR 127.2; 22 USC 2778; 18 USC 1001) I, [insert your name], as authorized by [name of company, if applicable] warrant the truth of the statements made herein.” We recommend submitting for registration renewal well in advance to ensure this office receives the request up to 45 days before registration expiration date. However, your registration must be received at least 30 days prior to this new expiration date. Registration must be current to apply for export licenses or other approvals, or to use export exemptions. Your registration is not current, for example, if you have not notified this office of any material change in the information contained in your Registration Statement (ITAR Section 122.4).

If you have any questions regarding registration, please contact us at (202) 660-1282 or DDTCResponseTeam@state.gov.

Sincerely,

David Cook
Chief, Registration Compliance & Analysis (RCA)
International Quality Registrars Corporation

ISO 9001:2015
Quality Management System - Requirements

The organization's QMS has been evaluated according to the International Quality Registrars (IQR) Corporation QMS certification scheme for the following scope:

"Design, Development and Manufacture of Microwave Frequency Components, Sub-Systems and Systems, and Contract Manufacturing Services"

Exclusions: None

This QMS certification is subject to periodic audits by International Quality Registrars (IQR) Corporation.

Registration No.: 18-120804-1Q
Client ID: PM109
Cert. Expiration Date: 09/17/21
Cert. Issued Date: 09/17/18

Last Cert. Revision Date: 09/17/18
Initial Cert. Issue Date: 02/24/09
Sheet No. 1 of 1

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